

# THE MINERAL INDUSTRIES OF KENYA AND UGANDA

By Thomas R. Yager

## KENYA

The mineral industry in the East African country of Kenya was chiefly noted for its production of fluorspar, salt, and soda ash. Other industrial minerals produced in recent years included barite, diatomite, feldspar, gypsum, lime, silica sand, and vermiculite. Building materials produced included cement, coral, granite, limestone, marble, and shale. Kenya produced small amounts of gold and secondary aluminum, iron ore, lead, and steel. The country also produced carbon dioxide gas, gemstones, and refined petroleum products (table 1).

In 2003, Kenya's gross domestic product (GDP) increased by 1.6% after rising by 1% in 2002 and 1.2% in 2001. The GDP was \$32.7 billion at purchasing power parity; per capita GDP at purchasing power parity was about \$1,000. In 2003, manufacturing accounted for 13% of the GDP; building and construction, 2.3%; and mining and quarrying, 0.6% (Central Bank of Kenya, 2004, p. 14; International Monetary Fund, 2004, p. 206; 2004<sup>§</sup>; Kabaara, 2004).

## Commodity Review

### Metals

**Gold.**—Most of Kenya's gold production was artisanal. International Gold Exploration AB (IGE) operated the Lolgorien production facilities and the Teng Teng Mine. In early 2003, IGE indicated that, given its current resources, production was expected to continue until 2004. National exports of gold amounted to 1,477 kilograms (kg) in 2002 compared with 1,545 kg in 2001 and 440 kg in 1997 (M.J. Njeru, Mines and Geology Department, written commun., 2003).

Kansai Mining Corp. explored for gold at the Migori prospect in southwestern Kenya, which had estimated resources of nearly 24 metric tons (t) of gold in several deposits. The company planned a drilling program for the first half of 2004. AfriOre Ltd. explored at the Ndori and Siaya prospects in western Kenya (AfriOre Ltd., 2004, p. 15; Kansai Mining Corp., 2004).

**Iron and Steel.**—Kenya mined small amounts of iron ore, which were used as raw material in cement production. The country's four rolling mills (table 2) had a combined capacity of 220,000 metric tons per year (t/yr) and relied upon imported billet. Kenya also had a galvanized steel capacity of 210,000 t/yr. The production of galvanized sheets rose to 168,710 t in 2003 compared with 149,108 t in 2002 and 144,424 t in 2001. In late 2003, Mabati Rolling Mills produced galvanized steel at a rate that exceeded its nameplate capacity of 120,000 t/yr (Central Bank of Kenya, 2004, p. 17).

The International Iron and Steel Institute (2004, p. 81, 91) estimated that Kenya's imports of semimanufactured and finished steel products amounted to 411,000 t in 2002 compared with 344,000 t in 2001 and 324,000 t in 1997. From 1997 to 2002, Kenya's apparent consumption of finished steel rose to 429,000 t from 342,000 t.

**Lead and Zinc.**—Associated Battery Manufacturers EA operated Kenya's only secondary lead smelter at Athi River. National production of refined lead amounted to about 1,000 t/yr, and consumption, 3,000 t/yr. In 2003, Kenya consumed 12,000 t of imported zinc compared with 11,000 t in 2002. Zinc was used in the production of galvanized steel (International Lead and Zinc Study Group, 2004, p. 6, 8, 40).

**Titanium and Zirconium.**—Tiomin Resources Inc. planned to mine the heavy-mineral sands deposits at Kwale starting at the end of 2005. During the first 6 years of the project, Tiomin would produce 330,000 t/yr of ilmenite, 77,000 t/yr of rutile, and 37,000 t/yr of zircon. The expected mine life was 19 years. In September 2003, the Government approved Tiomin's application for a special mining lease at Kwale (Tiomin Resources Inc., 2004, p. 12, 26).

Resources at Kwale were 254 million metric tons (Mt) with an ilmenite content of 4.3 Mt; rutile, 1 Mt; and zircon, 540,000 t. Tiomin also held licenses for the Kilifi, Mambrui, and Vipongo deposits, which had total ilmenite resources of 43 Mt; rutile, 3.1 Mt, and zircon, 2.6 Mt (Tiomin Resources Inc., 2004, p. 15, 33-34).

## Industrial Minerals

**Carbon Dioxide.**—Carbacid Ltd. produced natural carbon dioxide gas at Kereita in the Kaimbu District. In 2002, production was 5,662 t compared with 5,645 t in 2001 and 9,214 t in 1997. Domestic consumers included breweries, producers of mineral water, and the transportation industry. In the fiscal year that ended on July 31, 2003, Carbacid's domestic sales increased by 16%, and export sales, 46%; some of the company's output was exported to Tanzania, Uganda, and Zambia (M.J. Njeru, Mines and Geology Department, written commun., 2003; Nathoo, 2004).

**Cement.**—Kenya's three cement producers had a combined capacity of 2.75 million metric tons per year (Mt/yr). National cement production increased to nearly 1.54 Mt in 2003 from 1.46 Mt in 2002 and 1.32 Mt in 2001. Athi River Mining (ARM) planned to

<sup>1</sup>References that include a section mark (§) are found in the Internet References Cited sections.

invest \$9 million in a new clinker plant that would double the company's production capacity. ARM expected the plant to be completed in 2006 (Building Bulletin, 2003; Central Bank of Kenya, 2004, p. 18).

In 2002, Bamburi Cement Ltd. had a 60% share of the domestic cement market; East African Portland Cement Co. Ltd., 32%; and ARM, 8%. In 2003, Kenya's cement consumption increased by 3.2% after rising by 7.7% in 2002 (International Cement Review, 2003; Central Bank of Kenya, 2004, p. 18).

**Fluorspar.**—Kenya Fluorspar Ltd. mined fluorspar in the Keiro Valley in western Kenya; the company produced 95,278 t in 2003. Most of the company's production was exported. The value of production amounted to \$6.6 million in 2003, and exports, \$7.9 million. Kenya Fluorspar planned to increase its processing plant capacity to 144,000 t/yr in 2005 from 132,000 t/yr in 2004 and 120,000 t/yr in 2003. Reserves were estimated to be 7 Mt (Crossley, 2004; Kabaara, 2004).

**Gemstones.**—Kenya produced gemstones that included amethyst, aquamarine, cordierite, green garnet (tsavorite), ruby, sapphire, and tourmaline (table 1). Rockland (K) Kenya Ltd., which operated the John Saul ruby mine, was the country's leading producer and exporter of ruby. National production of ruby fell to 3,043 kg in 2002 from 5,862 kg in 2001 and 5,175 kg in 1997. Tsavorite, which is a green grossular garnet that obtains its color from trace amounts of chromium and vanadium, was mined at Kuranze and other deposits. From 1997 to 2002, tsavorite output decreased to 20 kg from 50 kg in 1997; production fell in 2003 because of high mining costs (GZ Journal, 2003; M.J. Njeru, Mines and Geology Department, written commun., 2003).

**Salt.**—Magadi Soda Ash Ltd. extracted salt from Lake Magadi as a byproduct of the soda ash production process. The company sold its salt production on the domestic market. In 2002, salt output from Lake Magadi rose to 18,848 t from 5,664 t in 2001 and 6,280 t in 1997 (Brunner Mond Group, 2003; M.J. Njeru, Mines and Geology Department, written commun., 2003).

**Soda Ash.**—Magadi Soda Ash Ltd. mined trona from Lake Magadi. The production of soda ash rose to 352,560 t in 2003 from 304,110 t in 2002 and 242,910 t in 1998. Output increased in 2003 because of improved dredging equipment. The value of production amounted to about \$40 million, and exports, nearly \$32 million. Most of Magadi's output was exported to Africa, the Middle East, and Southeast Asia (Brunner Mond Group, 2003; Kabaara, 2004; M.J. Njeru, Mines and Geology Department, written commun., 2003).

In December 2003, Magadi announced plans to spend \$97 million on a new processing plant and repairs to its railway. The European Investment Bank, the International Finance Corporation, and Netherlands Development Finance Company FMO agreed to provide \$55 million of the necessary funds; Magadi would finance the remaining \$42 million. The new plant would increase Magadi's production capacity to 715,000 t/yr; production was expected to start in 2006 (Reuters, 2003).

**Sodium Silicate.**—ARM had sodium silicate plants at Athi River and Kaloleni that had a combined capacity of 20,000 t/yr. The Athi River plant was commissioned in 2002 and operated at full capacity in the first quarter of 2003. Kenya's demand for sodium silicate increased in the first half of 2003. ARM produced more than 50% of the sodium silicate for the East African regional market; exports were shipped to Ethiopia, Madagascar, Malawi, Rwanda, South Africa, Tanzania, and Uganda. Domestic consumers included the local detergent and soap industries (Athi River Mining Ltd., 2003, p. 3; Construction Review, 2003§).

## **Mineral Fuels**

**Petroleum.**—Kenya's refinery produced petroleum products from imported crude petroleum. In 2003, the value of imported crude petroleum and petroleum products rose to an estimated \$879 million from \$764 million in 2002. Petroleum and petroleum products accounted for 23% of total imports. Exports of petroleum products fell to an estimated \$4 million in 2003 from \$54 million in 2002 (Central Bank of Kenya, 2004, p. 27).

In May 2003, Woodside Energy Ltd. of Australia signed a farm-in agreement with Dana Petroleum (E&P) Ltd. for a 40% interest in production-sharing agreements in offshore blocks L5, L7, L10, and L11. Dana held a 40% interest in these blocks, and Star Petroleum International (Kenya) Ltd., 40%. In August, Woodside announced that it had purchased a 50% interest in offshore blocks L6, L8, and L9. Afrex Ltd. held a 30% interest in these blocks, and Pancontinental Oil and Gas NL, the remaining 20%. Woodside undertook seismic surveys in all seven blocks in 2003; drilling could begin as early as 2005 in blocks L5, L7, L10, and L11 (Oil & Gas Journal, 2003; Woodside Energy Ltd., 2003).

## **Infrastructure**

The state-owned Kenya Electricity Generating Co. Ltd. (Kengen) generated most of Kenya's electric power. In November 2003, Kengen commissioned the Okaria II geothermal plant, which had a capacity of 64 megawatts (MW). Other projects under development included the 48-MW Okaria III geothermal and the 60-MW Sondu-Miri hydropower plants. By 2019, Kengen planned to add a total of 451 MW of new geothermal capacity. Kenya's geothermal and hydroelectric resources were estimated to be more than 2,000 MW and 1,400 MW, respectively (Business Council for Sustainable Energy, 2003, p. 25, 27).

Kenya produced 4,662 gigawatthours (GWh) of electricity in 2003; output increased by 4.9% in 2003 and 2.5% in 2002. In 2003, hydroelectric sources accounted for 69.4% of total supply; thermal, 20%; and geothermal, 10.6%. Higher rainfall increased the amount of hydroelectric power produced and led to lower imports of electricity from Uganda. Electricity consumption rose by 5.4% in 2003 and 2.5% in 2002 (Central Bank of Kenya, 2004, p. 18).

Kenya had about 63,800 kilometers (km) of roads, of which less than 9,000 km was paved. The rail network covered 2,778 km. Pipelines for petroleum products covered about 480 km. The Governments of Kenya and Uganda agreed to build a 320-km pipeline that would carry petroleum products to Kampala in Uganda from Eldoret in Kenya (Africa Energy Intelligence, 2003; Bal, 2003).

## Outlook

The International Monetary Fund (2004, p. 206) forecasted that GDP growth would be 2.3% in 2004 and 3.6% in 2005. In November 2003, the International Monetary Fund agreed to loan Kenya nearly \$253 million under the Poverty Reduction and Growth Facility. In 2004, the resumption of international donor support was expected to support public sector construction projects that would increase cement demand. The outlook for fluorspar, soda ash, and titanium minerals depended heavily upon global market trends. In 2003, the market for titanium dioxide was in a state of excess supply. Demand for titanium dioxide was expected to increase by about 110,000 t/yr; the market was likely to be in balance by 2007 (International Monetary Fund, 2003; Mining Review Africa, 2003; Central Bank of Kenya, 2004, p. 18).

## References Cited

- Africa Energy Intelligence, 2003, Tanzania Petroleum—To operate a regional pipeline?: Africa Energy Intelligence, no. 357, November 12-25, p. 2.
- AfriOre Ltd., 2004, Quarterly report—First quarter: Toronto, Ontario, Canada, AfriOre Ltd., 16 p.
- Athi River Mining Ltd., 2003, 2002 annual report and accounts: Nairobi, Kenya, Athi River Mining Ltd., 28 p.
- Bal, Muriel, 2003, Kenyan crossroads: International Cement Review, January, p. 66-70.
- Brunner Mond Group, 2003, Major investment boosts Magadi production rates: Northwich, United Kingdom, Brunner Mond Group press release, February 24, 2 p.
- Building Bulletin, 2003, Athi Mining River new clinker line: Building Bulletin, no. 68, December, p. 2.
- Business Council for Sustainable Energy, 2003, Market assessment report—Eastern Africa Geothermal Market Acceleration Conference, Nairobi, Kenya, April 9-11, 2003: Arlington, Virginia, Business Council for Sustainable Energy, 138 p.
- Central Bank of Kenya, 2004, Kenya monthly economic review: Central Bank of Kenya Monthly Economic Review, February, 60 p.
- Crossley, Penny, 2004, Fluorspar in focus: Industrial Minerals, no. 436, January, p. 26-37.
- GZ Journal, 2003, Market report: GZ Journal, December, p. 82.
- International Cement Review, 2003, Kenya, in The global cement report (5th ed): Dorking, United Kingdom, Tradeship Publications Ltd., p. 198-199.
- International Iron and Steel Institute, 2004, Steel statistical yearbook 2003: Brussels, Belgium, International Iron and Steel Institute, 111 p.
- International Lead and Zinc Study Group, 2004, Lead and zinc statistics: International Lead and Zinc Study Group Lead and Zinc Statistics, v. 43, no. 5, May, 68 p.
- International Monetary Fund, 2003, IMF approves US\$252.75 million PRGF arrangement for Kenya: Washington, DC, International Monetary Fund press release No. 03/201, November 21, 5 p.
- International Monetary Fund, 2004, World economic outlook—The global demographic transition: Washington, DC, International Monetary Fund, September, 287 p.
- Kabaara, Dennis, 2004, An economic snapshot of mining: East African Standard [Nairobi, Kenya], July 18, 3 p.
- Kansai Mining Corp., 2004, Annual report for year ending September 30, 2003: Whitehorse, Yukon Territory, Canada, Kansai Mining Corp., 10 p.
- Mining Review Africa, 2003, Corridor Sands—An exciting opportunity for regional employment and contracts: Mining Review Africa, no. 5, p. 8-12.
- Nathoo, Azim, 2004, Firm is a consistently good performer: Nation [Nairobi, Kenya], January 3, 2 p.
- Oil & Gas Journal, 2003, Quick takes: Oil & Gas Journal, v. 101, no. 22, June 2, p. 8-9.
- Reuters, 2003, IFC invests in joint \$97 mln Kenya soda ash deal: London, United Kingdom, Reuters press release, December 1, 2 p.
- Tiomin Resources Inc., 2004, Investor presentation—April 2004: Toronto, Ontario, Canada, Tiomin Resources Inc, 37 p.
- Woodside Energy Ltd., 2003, Woodside increases Kenyan acreage: Perth, Australia, Woodside Energy Ltd. press release, August 28, 1 p.

## Internet References Cited

- Construction Review, 2003, Leading through growth and product diversification, accessed October 1, 2003, at URL <http://www.readafrica.com/240503110042comag.html>.
- International Monetary Fund, 2004 (April 21), Kenya, World Economic Outlook Database, accessed June 29, 2004, via URL <http://www.imf.org/external/pubs/ft/weo/2004/01/data/index.htm>.

## UGANDA

In recent years, the East African country of Uganda was known to produce cobalt, columbium (niobium), gold, iron ore, steel, tantalum, tin, and tungsten. Uganda also has produced such industrial minerals as gypsum, kaolin and other clays, lime, phosphate rock, salt, and vermiculite, and such building materials as cement, limestone, and pozzolanic materials.

Uganda's GDP increased by 4.7% in 2003 after rising by 6.8% in 2002 and 4.9% in 2001. The GDP was \$34.8 billion at purchasing power parity; per capita GDP at purchasing power parity was about \$1,400. In fiscal year 2002-03, manufacturing accounted for 10% of the GDP; construction, 7%; water and electricity, 1%; and mining and quarrying, 1%. The mining and quarrying sector grew by 11.5% in fiscal year 2002-03 (Uganda Bureau of Statistics, 2003, p. 175, 179; International Monetary Fund, 2004, p. 206; 2004\$).

In 2003, the Government of Uganda completed the withdrawal of its military forces from the Democratic Republic of the Congo [Congo (Kinshasa)]. The conflict between the Government and the Lord's Resistance Army in northern Uganda remained unresolved at the end of the year.

## Government Policies and Programs

In November 2003, the World Bank Group proposed the Sustainable Management of Mineral Resources Project, which would assist Uganda in increasing production and tax revenues from its mining sector. The project was expected to cost \$28 million; the World Bank and other foreign lenders would provide \$25 million in financing. The Sustainable Management of Mineral Resources Project would decentralize tax collection procedures to increase revenues from royalties; finance geochemical and geologic mapping and airborne geophysics; strengthen governance and transparency; promote private investment in the mining sector; and increase

production and improve environmental conditions at small-scale and artisanal mines (World Bank Group, 2003, p. 37, 44-45, 49-50, 53-54).

## Environment

Environmental issues associated with the mineral sector in Uganda included cobalt, copper, nickel, and zinc pollution of the Rukoki River and Lake George from workings and tailings at the Kilembe copper mine; deforestation from small-scale and artisanal lime producer that used hardwood as fuel; erosion and river siltation in the Buhweju Goldfield; mercury pollution in the Busia Goldfield from artisanal mining operations; and damage to riverbanks and wetlands from sand mining (Uganda Ministry of Energy and Mineral Development, 2003b, p. 22-24, 27-30).

## Commodity Review

### Metals

**Cobalt.**—Kasese Cobalt Co. Ltd. (KCCL) (MFC Bancorp Ltd., 75%) produced refined cobalt from the Kilembe stockpile. KCCL's operations were put on care-and-maintenance status in September 2002 because of low world cobalt prices. Cobalt prices more than doubled from September 2002 to December 2003; MFC Bancorp was expected to restart production in February or March 2004 (Metal Bulletin, 2003). According to predictions by the World Bank Group (2003, p. 58), the value of cobalt production could rise to \$33 million in 2008 from \$13.55 million in 2000 should KCCL produce at its full capacity of 1,000 t/yr.

**Columbium (Niobium) and Tantalum.**—Artisanal miners produced columbite-tantalite in western Uganda. National production of columbite-tantalite fell to 6,463 kg in 2002 from 11,092 kg in 2001; exports fell to 3,350 kg from 14,960 kg (Uganda Ministry of Energy and Mineral Development, 2003a, p. 40). According to predictions by the World Bank Group (2003, p. 58), the value of columbite-tantalite production could rise to \$15 million in 2008 from \$13.55 million in 2000.

**Copper, Gold, Lead, Silver, and Zinc.**—Busitema Mining Company (BMC) started gold production in 2003; its plant operated at about 20% of capacity in July. The company recovered gold from ore and tailings near Busia. BMC expected the operation to last for 10 years at full capacity. If BMC secured additional funding, operations could reach full capacity in 2½ years (Ojambo, 2003).

National gold exports fell to 4,160 kg in 2003 from 7,589 kg in 2002 because of border conflicts that inhibited trade. Gold accounted for 13% of the value of Uganda's total exports in 2002. The majority of gold exports were reported to be reexports from Congo (Kinshasa) (Uganda Bureau of Statistics, 2003, p. 193; Oketch, 2004).

In 2003, Anglo-Uganda Corp. began sample drilling in the Kamalenge Valley. Glencar Mining plc of Ireland explored for gold at Buinja in the southeastern part of the country. Roraima Mining Co. held licenses in Eastern Busia and Bugiri Districts. In 2002 and 2003, Cresta Mining Corp. Ltd. explored for gold at its Buhindagi River, Kitomi River, Mafuga Forest, and Ntsinda Hill concessions. The company also explored for copper, gold, lead, silver, and zinc at its Kampono and Kitaka polymetallic concessions (Thabex Exploration Ltd., 2004).

According to predictions by the World Bank Group (2003, p. 58-59), the expansion of the Busitema Mine and the opening of the Kisita Mine and other projects could cause the value of reported gold production to rise to between \$11.4 million to \$47.5 million in 2008 from \$480,000 in 2000.

**Tin.**—Small amounts of tin were produced in Uganda until 2002. According to predictions by the World Bank Group (2003, p. 58), the reopening of tin mines could cause the value of tin production to reach between \$2.4 million and \$5 million in 2008.

**Tungsten.**—In late 2003, Krone (U) Ltd. completed the construction of a temporary bridge to its small-scale mining operation at Nyamuliro in the Kabale district. Krone transported equipment to the mine site that would allow the company to produce on a more consistent basis. According to predictions by the World Bank Group (2003, p. 58), increased production at the Nyamuliro Mine could cause the value of tungsten production to reach between \$1.2 million and \$2 million in 2008.

### Industrial Minerals

**Cement.**—Two factories with a combined capacity of about 520,000 t/yr supplied Uganda's cement market (table 2). Cement production rose to 505,959 t in 2002 compared with 431,084 t in 2001 and 321,329 t in 1998. In 2003, Hima Cement Industries Ltd. produced at a rate of 290,000 t/yr, and Tororo Cement Industries Ltd., 215,000 t/yr. By 2005, Hima and Tororo planned to complete plant expansions at a cost of \$30 million and \$45 million, respectively. Hima's clinker plant and Tororo's cement plant would have a capacity of 365,000 t/yr each (Nakaweesi, 2003; Uganda Bureau of Statistics, 2003, p. 151; World Bank Group, 2003, p. 58-59).

**Clays.**—Uganda produced kaolin and other clays (table 1); in 2002, the value of national clay production amounted to about \$130,000. In 2002, the output of clay bricks and tiles was 34,639 t compared with 29,570 t in 2001 and 32,054 t in 1998. Uganda had seven producers of bricks and tiles (Uganda Bureau of Statistics, 2003, p. 149, 151; John Odida, Ministry of Energy and Mineral Development, written commun., 2003).

**Diamond.**—In 2002 and 2003, Cresta Mining explored for diamond at its Lake Bugwagi concession in Bushenyi District and its Muko and Muko Extension licenses in the Kabale District (Thabex Exploration Ltd., 2004).

**Phosphate Rock.**—Nilefos Minerals Ltd. (a subsidiary of Madhvani International SA), and Rhodia Chimie SA promoted the Sukulu phosphate project. Nilefos planned to start production of phosphate rock and granulated triple superphosphate from the

Sukulu deposits starting in 2006; Rhodia Chimie planned to help market the products. The mine, fertilizer plant, and related infrastructure were expected to cost \$400 million during the period 2005 to 2008. In September 2003, the U.S. Trade and Development Agency granted \$360,000 for the feasibility study (U.S. Department of State, 2003). According to predictions by the World Bank Group (2003, p. 58), the value of phosphate production could amount to between \$41 million and \$55 million in 2008.

Canmin Resources Ltd. (a subsidiary of International Business Investments Corp.) held an exclusive prospecting license (EPL) for the Busumbu phosphate deposit, which was located 1 km from the Namekera vermiculite mine. In 2003, the company indicated that it had no plans to develop Busumbu until the Namekera project was more advanced (International Business Investments Corp., 2003).

**Stone, Crushed.**—The production of limestone rose to 226,408 t in 2003 from 140,022 t in 2002; Uganda also produced pozzolanic materials (Oketch, 2004). According to predictions by the World Bank Group (2003, p. 58), higher production at the Hima and Tororo cement plants could cause the value of limestone production to rise to between \$21 million and \$40 million in 2008 from \$12.73 million in 2000. During the same period, the value of production of pozzolanic materials could rise to between \$600,000 and \$1.2 million in 2008 from \$410,000 in 2000.

**Vermiculite.**—In 2003, Canmin produced 1,724 t of vermiculite at the Namekera Mine compared with 664 t in 2002. The company exported its output to Canada, Europe, and the United States; domestic users included the horticultural sector. Canmin negotiated 20,000 t/yr of sales and planned to increase this figure to 40,000 t/yr by the end of 2004. The capacity of the mine was 25,000 t/yr; to raise the capacity to 40,000 t/yr would require an investment of less than \$100,000 (International Business Investments Corp., 2003; Fitchett, 2004). According to predictions by the World Bank Group (2003, p. 58), increased capacity at the Namekera Mine could cause the value of vermiculite production to reach between \$2.2 million and \$4.4 million in 2008.

## **Mineral Fuels**

**Petroleum.**—Uganda did not have production facilities for crude petroleum or petroleum products. In 2002, imports of petroleum amounted to \$173.8 million, or about 16% of total imports. In October 2003, Heritage Oil Corp. drilled the Turaco-2 exploration well in block 3 that yielded hydrocarbons. Heritage planned further exploration in 2004 and 2005. Hardman Resources NL held a license for block 2 (Uganda Bureau of Statistics, 2003, p. 197-198; Heritage Oil Corp., 2004, p. 19-20).

## **Infrastructure**

Uganda's electricity production increased to 1,702 GWh in 2002 from 1,577 GWh in 2001 and 1,234 GWh in 1998. Most domestic production came from hydroelectric power sources. After electricity losses of 326 GWh, domestic electricity sales amounted to 1,111 GWh. The country exported 265 GWh in 2002, mostly to Kenya. In 2002, Uganda had a generating capacity of 303 MW, most of which was hydroelectric. Peak demand was 302.8 MW of capacity. By April 2005, the capacity of the Kiira Dam was expected to increase from 120 MW to 200 MW (Uganda Bureau of Statistics, 2003, p. 152-153; Uganda Ministry of Energy and Mineral Development, 2003a, p. 4-6).

Uganda had about 25,600 km of roads, of which approximately 2,300 km was paved. The rail network covered about 1,230 km (Uganda Bureau of Statistics, 2003, p. 154). Lake Albert, Lake Edward, Lake George, Lake Victoria, Lake Yoga, the Albert Nile River, and the Victoria Nile River were the principal waterways.

## **Outlook**

The International Monetary Fund (2004, p. 206) predicted that Uganda's GDP would grow by 5.7% in 2004 and 6% in 2005. Depending upon world market conditions and current and future investments in the minerals sector, the value of mineral production could rise to between \$128 million and \$203 million in 2008 from \$41 million in 2000 (World Bank Group, 2003, p. 58-59).

## **References Cited**

- Fitchett, G.A., 2004, Uganda's "Investor of the year" now approaching positive cash flow, *in* Junior Mining Company Profiles: Northern Miner, March, p. 11.
- Heritage Oil Corp., 2004, 2003 annual report—Opportunity—Advancing our shareholder value: Calgary, Alberta, Canada, Heritage Oil Corp., 48 p.
- International Business Investments Corp., 2003, Quarterly report—Period ended September 30, 2003: Toronto, Ontario, Canada, International Business Investments Corp., 9 p.
- International Monetary Fund, 2004, World economic outlook—The global demographic transition: Washington, DC, International Monetary Fund, September, 287 p.
- Metal Bulletin, 2003, Ugandan relations: Metal Bulletin, no. 8819, December 8, p. 37.
- Nakaweesi, Dorothy, 2003, Imported cement causes price cuts: Monitor [Kampala, Uganda], September 29, 1 p.
- Ojambo, Fred, 2003, Canadian firm eyes Busia gold: Monitor [Kampala, Uganda], July 14, 1 p.
- Oketch, M.L., 2004, Insecurity hurts gold exports: Monitor [Kampala, Uganda], August 5, 1 p.
- Thabex Exploration Ltd., 2004, Thabex—Acquisition of exclusive prospecting licenses in Uganda: Johannesburg, South Africa, Thabex Exploration Ltd. press release, February 4, 2 p.
- Uganda Bureau of Statistics, 2003, 2003 Statistical abstract: Entebbe, Uganda, Uganda Bureau of Statistics, 225 p.
- Uganda Ministry of Energy and Mineral Development, 2003a, Annual report of the ministry—2002: Kampala, Uganda, Uganda Ministry of Energy and Mineral Development, 84 p.
- Uganda Ministry of Energy and Mineral Development, 2003b, Sectoral environment and social assessment (SESA) for the mineral sector development technical assistance project (MSDTA project): Kampala, Uganda, Uganda Ministry of Energy and Mineral Development, 74 p.
- U.S. Department of State, 2003, U.S. Trade and Development Agency to Support Feasibility Study for Sukulu Hills Project: Kampala, Uganda, U.S. Embassy press release, September 19, 1 p.

World Bank Group, 2003, Sustainable management of mineral resources project—Project appraisal document: Washington, DC, World Bank Group, November 11, Report no. 26886-UG, 90 p.

### **Internet Reference Cited**

International Monetary Fund, 2004 (April 21), Uganda, World Economic Outlook Database, accessed June 29, 2004, via URL <http://www.imf.org/external/pubs/ft/weo/2004/01/data/index.htm>.

TABLE 1  
KENYA AND UGANDA: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Country and commodity	1999	2000	2001	2002 <sup>e</sup>	2003 <sup>e</sup>
KENYA <sup>2</sup>					
Aluminum, secondary <sup>c</sup>	2,400	2,400	2,400	2,400	2,400
Carbon dioxide gas, natural	10,006	7,744	5,645	5,662 <sup>3</sup>	5,700
Cement, hydraulic thousand tons	1,440 <sup>r, e</sup>	1,367 <sup>r</sup>	1,319 <sup>r</sup>	1,463 <sup>r, 3</sup>	1,537 <sup>3</sup>
Clays:					
Bentonite	--	64	50	50	50
Kaolin	192	793	700	710 <sup>r</sup>	710
Kyanite	NA	(4)	--	--	--
Other	15,000	18,000	18,000 <sup>r, e</sup>	18,000 <sup>r</sup>	18,000
Diatomite	507	448	441	1,333 <sup>3</sup>	1,400
Feldspar	115 <sup>e</sup>	82	73	75	75
Fluorspar, acid grade <sup>5</sup>	93,602	100,102	118,850	85,015 <sup>3</sup>	95,278 <sup>3</sup>
Gemstones, precious and semiprecious:					
Amethyst <sup>5</sup> kilograms	514	1,107	1,100 <sup>e</sup>	570	570
Aquamarine <sup>5</sup> do.	1,216	132	130 <sup>e</sup>	70	70
Cordierite, iolite <sup>5</sup> do.	444	280	280 <sup>e</sup>	150	150
Green garnet do.	26	20	25	20 <sup>3</sup>	10
Rhodolite garnet do.	1,214 <sup>5</sup>	3,409 <sup>5</sup>	3,400 <sup>e</sup>	1,800	1,800
Ruby do.	4,488	5,896	5,862	3,043 <sup>3</sup>	3,100
Sapphire <sup>5</sup> do.	7,232	10,686	10,700 <sup>e</sup>	5,600	5,600
Tourmaline do.	4,617 <sup>5</sup>	18,844 <sup>5</sup>	18,800 <sup>e</sup>	9,800	9,800
Gold, mine output, Au content <sup>5</sup> do.	990	1,243	1,545	1,477 <sup>3</sup>	1,500
Gypsum and anhydrite	9,500 <sup>e</sup>	8,416	8,200	9,100	9,600
Iron ore	NA	790	920	1,000	1,000
Lead, refined secondary	1,000	1,000	1,000	1,000 <sup>3</sup>	1,000 <sup>3</sup>
Lime	4,473	1,282	1,300 <sup>r, e</sup>	1,300 <sup>r</sup>	1,300
Petroleum refinery products:					
Gasoline thousand 42-gallon barrels	2,481	2,828	2,329 <sup>r</sup>	2,400 <sup>r</sup>	2,400
Kerosene and jet fuel do.	2,676	3,175	2,519 <sup>r</sup>	2,600 <sup>r</sup>	2,600
Distillate fuel oil do.	3,798	4,531	3,256 <sup>r</sup>	3,300 <sup>r</sup>	3,300
Residual fuel oil do.	2,871	3,402	3,730 <sup>r</sup>	3,800	3,800
Liquefied petroleum gas do.	314	395	343 <sup>r</sup>	400 <sup>r</sup>	400
Other do.	127	134	916 <sup>r</sup>	1,000 <sup>r</sup>	1,000
Total do.	12,267	14,465	13,093 <sup>r</sup>	13,500 <sup>r</sup>	13,500
Salt, crude	44,886	16,359	5,664	18,848 <sup>3</sup>	19,000
Soda ash	245,680	238,190	297,780	304,110 <sup>3</sup>	352,560 <sup>3</sup>
Stone, sand and gravel:					
Granite for dimension stone	860	182	185 <sup>r, e</sup>	185 <sup>r</sup>	185
Limestone for cement thousand tons	700	660 <sup>r, e</sup>	640 <sup>r, e</sup>	710	750
Limestone for dimension stone do.	32,000	32,000	32,000 <sup>r</sup>	32,000 <sup>r, 3</sup>	32,000
Marble for dimension stone	433	116	120 <sup>r, e</sup>	120 <sup>r</sup>	120
Sand, industrial; glass <sup>e</sup>	12,000	12,000 <sup>r</sup>	12,000 <sup>r</sup>	13,000 <sup>r</sup>	13,000
Shale <sup>e</sup>	185,000 <sup>r</sup>	185,000 <sup>r</sup>	190,000 <sup>r</sup>	190,000 <sup>r</sup>	190,000
Sulfuric acid	20,000	20,000	20,000	20,000 <sup>3</sup>	20,000 <sup>p</sup>
Vermiculite	164 <sup>5</sup>	124 <sup>5</sup>	--	-- <sup>3</sup>	--
UGANDA <sup>6</sup>					
Cement, hydraulic	347,274	367,470	431,084 <sup>r</sup>	505,959 <sup>r, 3</sup>	505,000
Clay	NA	NA	73,505	44,790 <sup>3</sup>	50,000
Cobalt	77	420	634	450	-- <sup>3</sup>
Columbite-tantalite, ore and concentrate:					
Gross weight kilograms	--	2,712	11,092	6,463 <sup>3</sup>	7,200
Nb content do.	--	992	5,211	3,036 <sup>3</sup>	3,400
Ta content do.	--	689	2,979	1,736 <sup>3</sup>	1,900
Gold, mine output, Au content do.	5	56	(4)	3 <sup>3</sup>	5
Gypsum	256	--	--	5 <sup>3</sup>	10
Iron ore	3,169	4,632 <sup>r</sup>	1,236	-- <sup>3</sup>	--
Kaolin	198	14	90	178 <sup>3</sup>	200
Lime, hydrated and quick <sup>c</sup>	10,000	10,000	10,000	10,000	10,000

Footnotes at end of table.

TABLE 1--Continued  
KENYA AND UGANDA: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Country and commodity	1999	2000	2001	2002 <sup>e</sup>	2003 <sup>e</sup>
UGANDA--Continued					
Limestone	121,521	253,032	229,792	140,022 <sup>3</sup>	226,408 <sup>3</sup>
Phosphate minerals, apatite	(4) <sup>e</sup>	--	--	-- <sup>3</sup>	--
Pozzolan materials	20,213	35,603	22,782	12,388 <sup>3</sup>	14,000
Salt <sup>e</sup>	5,000	5,000	5,000	5,000	5,000
Steel <sup>e</sup>	7,000 <sup>r</sup>	7,000	7,000	7,000	7,000
Tin, mine output, Sn content	(4)	(4)	18	-- <sup>3</sup>	--
Tungsten, mine output, W content	(4)	(4)	17	16 <sup>3</sup>	20
Vermiculite	--	--	200 <sup>r</sup>	664 <sup>3</sup>	1,724 <sup>3</sup>

<sup>e</sup> Estimated. <sup>p</sup> Preliminary. <sup>r</sup> Revised. NA Not available. -- Zero.

<sup>1</sup> Includes data available through September 14, 2004.

<sup>2</sup> In addition to the commodities listed, a variety of minerals and construction materials [brick clays, coal, gravel, meerschaum, mica, murram (laterite), crushed rock, and construction sand] may be produced, but quantities are not reported, and information is inadequate to make estimates of output.

<sup>3</sup> Reported figure.

<sup>4</sup> Less than 1/2 unit.

<sup>5</sup> Exports.

<sup>6</sup> In addition to the commodities listed, the following are presumably produced but information is inadequate to estimate output: clay, corundum, lead, marble, sand and gravel, and silica sand.



TABLE 2  
KENYA AND UGANDA: STRUCTURE OF THE MINERAL INDUSTRIES IN 2003

(Metric tons unless otherwise specified)

Country and commodity		Major operating companies	Location of main facilities	Annual capacity
<b>KENYA</b>				
Carbon dioxide gas, natural		Carbacid Ltd.	Kereita	NA.
Cement		Bamburi Cement Ltd.	Mombasa	1,100,000.
Do.		do.	Nairobi	1,000,000.
Do.		East African Portland Cement Co. Ltd.	Athi River	550,000.
Do.		Athi River Mining Ltd.	Kaloleni	100,000.
Diatomite		African Diatomite Industries Ltd.	Kariandusi and Soysambu	4,000.
Fluorspar		Kenya Fluorspar Ltd.	Kerio Valley	120,000.
Glass		Central Glass Industries Ltd.	Nairobi	51,100.
Do.		Impala Glass Industries Ltd.	do.	NA.
Gold	kilograms	International Gold Exploration AB	Akala, Lolgorien, and Kisii	155.
Lead, refined secondary		Associated Battery Manufacturers Co. Ltd.	Athi River	3,000.
Lime		Athi River Mining Ltd.	Kaloleni	27,000.
Do.		Homa Lime Company Ltd	Koru	30,000.
Petroleum, refined	thousand 42 -gallon barrels	Kenya Petroleum Refineries Ltd. [Government, 50%; British Petroleum plc, Caltex Oil (Kenya) Ltd., and Royal Dutch/Shell Group, 50%]	Mombasa	32,850.
Salt		Magadi Soda Ash Ltd. (Brunner Mold Group Ltd, 100%)	Magadi	40,000.
Do.		Krystalline Salt Ltd.	Nairobi	NA.
Do.		Mombasa Salt Works Ltd.	Mombasa	NA.
Do.		Salt Manufacturers Kenya Ltd.	do.	NA.
Soda ash		Magadi Soda Ash Ltd. (Brunner Mold Group Ltd, 100%)	Magadi	350,000.
Sodium silicate		Athi River Mining Ltd.	Athi River and Kaloleni	20,000.
<b>Steel:<sup>1</sup></b>				
Crude <sup>2</sup>		Kenya United Steel Co. Ltd. (E.A. Wire Industries Ltd., 81%)	Mombasa	20,000.
Rolled		Mabati Rolling Mills Ltd.	do.	120,000.
Do.		Standard Rolling Mills Ltd.	do.	40,000.
Do.		Kenya United Steel Co. Ltd.	do.	30,000.
Do.		Steelmakers Ltd.	do.	30,000.
Sulfuric acid		East African Heavy Chemicals	Webuye	NA.
Do.		Kel Chemicals Ltd.	Thika	NA.
Vermiculite <sup>3</sup>		Kenmag Investments Ltd.	Lodosoit	2,000.
<b>UGANDA</b>				
Cement		Hima Cement Industries Ltd. (Bamburi Cement Ltd., 70%)	Kasese	300,000.
Do.		Tororo Cement Industries Ltd.	Tororo	220,000.
Cobalt <sup>4</sup>		Kasese Cobalt Company Ltd. (MFC Bancorp Ltd., 75%; Government, 25%)	Kasese	1,000.
Lead, refined secondary		Uganda Batteries Ltd.	Kampala	1,000.
<b>Steel:<sup>5</sup></b>				
Crude		Steel Corp. of East Africa Ltd. (subsidiary of Madhvani Group)	Jinja	25,000.
Do.		Steel Rolling Mills Ltd. (subsidiary of Alam Group Ltd.)	do.	21,000.
Billet		Steel Corp. of East Africa Ltd. (subsidiary of Madhvani Group)	do.	60,000.
Rolled		do.	do.	101,200.
Do.		Steel Rolling Mills Ltd.	do.	24,000.
Do.		BM Technical Services Ltd.	Mbarara	20,000.
Do.		Sembule Steel Mills Ltd.	Kampala	20,000.
Tungsten		Krone Uganda Ltd.	Nyamurilo	115.
Vermiculite		Canmin Resources Ltd. (subsidiary of International Business Investments Corp.)	Namekara	25,000.

NA Not available.

<sup>1</sup>In addition to its crude and rolled steel facilities, Kenya has three galvanized steel plants with a capacity of 210,000 metric tons per year (t/yr).

<sup>2</sup>Has not operated since 1998.

<sup>3</sup>Has not operated since 2000.

<sup>4</sup>Ceased cobalt production in August 2002.

<sup>5</sup>In addition to its crude, billet, and rolled steel facilities, Uganda has a galvanized steel plant with a capacity of 30,000 t/yr.